# Low-Altitude Aerial

## LOW-ALTITUDE REMOTE CONTROLLED AIRPLANE

During the fall of 1998 and late summer of 1999 a 35-mm camera was mounted on the underside of a remote controlled airplane and used to photograph the RGDT. Jerry Fiedler of BLM- NSTC, and Randy Claussen constructed the Low-Altitude Remote Controlled Airplane (LARCA). Larry Cunningham, NSTC's Aerial Photography Acquisition Coordinator, documented, and assisted with the testing and refinement of both LARCA and on-board camera systems. Several successful LARCA missions were flown over the "dry wash" and selected outliers.

In 1998 a front engine, Senior Telemaster aircraft was extensively tested at a remote control airplane airstrip located at Chatfield State Park near Denver, Colorado. The plane had a 2.44-meter wingspan and MVVS 1.44, 2-cylinder engine. An Olympus 35-mm Single Lens Reflex (Model OM 2n) camera was mounted, in a container, on the underside and in the middle of the aircraft. The camera was equipped with aperture priority automatic setting or full manual setting, an automatic film advance, and an electronic cable release for the shutter. Several different camera settings, lenses, and film types were tested during this time.

A number of items were considered when choosing and mounting the camera such as:

- The weight, shape, and size (length and width) of the camera.
- The need to avoid radio and electronic interference between the camera's routine operation, the remote operation of the camera, and the remote controls which operated the LARCA.
- The need to isolate the camera from aircraft vibration.
- The ability to remotely activate the camera systems and range limitations for remote activation.
- The cameras ability to automatically advance the film.
- The need to minimize tip and tilt of the camera.
- The need to lock the focus at infinity verses using the auto focus.
- The need to set the shutter speed (should not drop below 1/200 of a second) versus using the auto exposure.
- The need to use manual focusing and a set focal length lens, which usually give better quality pictures, versus zoom and auto focus lens.
- Camera battery life limitations.

A digital camera was considered, however, at the time of the testing digital cameras with the needed pixel resolution were not economically feasible. Another disadvantage was the length of time to store each image would not allow for stereoscopic coverage.